

REPLACED BY
ART 34 AMDT

22

We claim:

- 5 1. A process for preparing polyoxymethylene by contacting a formaldehyde source with a catalyst of the formula I



10 where

M is Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, Fe, Ru, Os, Co, Rh or Ir,

15 Cp is a cyclopentadienyl ligand $\text{C}_5\text{H}_{(5-u)}\text{R}^1_u$, where

u is from 0 to 5 and

20 R^1 is alkyl, alkenyl, aryl, heteroaryl, aralkyl, COOR^2 , COR^2 , CN or NO_2 , and

R^2 is H, alkyl, aryl or aralkyl,

25 v is 1 or 2,

each L is independently a nitrile, CO or a ligand displaceable by CO,

w is an integer from 0 to 4,

30 Z is an anion, and

m and n are each independently an integer from 1 to 3.

- 35 2. A process as claimed in claim 1 where

Cp is a cyclopentadienyl ligand $\text{C}_5\text{H}_{(5-u)}\text{R}^1_u$, where

40 R^1 is methyl, CHO, COCH_3 , COC_2H_5 , COOCH_3 , COOC_2H_5 , CN or NO_2 .

45

3. A process as claimed in any of the preceding claims where M is Mo or W.

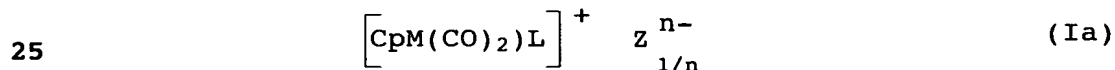
5 4. A process as claimed in any of the preceding claims where each L is selected independently from nitriles, CO, alkenes, phosphines, amines, ethers, carboxylic esters, cyclic carbonic esters, epoxides, hemiacetals, acetals and nitro compounds.

10 5. A process as claimed in any of the preceding claims where Z is a halide, sulfonate of the formula OSO_2R , where R is alkyl, partially or fully halogenated alkyl or aryl, carboxylate, complexed borate, complexed phosphate, complexed arsenate or complexed antimonate.

15 6. A process as claimed in claim 5 where Z is chloride, acetate, trifluoroacetate or trifluoromethanesulfonate.

20 7. A process as claimed in any of the preceding claims where the formaldehyde source is formaldehyde, trioxane or paraformaldehyde.

8. A catalyst of the formula Ia



where

M is Mo or W,

30 Cp is a cyclopentadienyl ligand $\text{C}_5\text{H}_4\text{R}^1$ or $\text{C}_5\text{H}_3\text{R}^1_2$, where R^1 is CHO, COCH_3 , COOCH_3 or COOC_2H_5 ,

L is CO or CH_3CN ,

35 Z is an anion and

n is an integer from 1 to 3.

40 9. A catalyst as claimed in claim 8 where

Cp is a cyclopentadienyl ligand $\text{C}_5\text{H}_4\text{R}^1$ where R^1 is CHO, COCH_3 or COOCH_3 or is a cyclopentadienyl ligand $\text{C}_5\text{H}_3\text{R}^1_2$ where R^1 is COOC_2H_5 .

10. A catalyst as claimed in claim 8 or 9 where Z is trifluoromethanesulfonate, trifluoroacetate, tetrafluoroborate, hexafluorophosphate or hexafluoroantimonate.

5

10

15

20

25

30

35

40

45